

REMARKS

Applicants respectfully request the Examiner to reconsider the present application in view of the foregoing amendments to the claims.

Status of Claims

In the present Reply, claims 1, 2, 3, 5, 8 and 9 have been amended. Claim 4 stands withdrawn from consideration. Thus, claims 1-9 are pending in the present application.

No new matter has been added by way of these amendments because each amendment is supported by the present specification. For example, the amendment to claim 1 has support at least at page 5, lines 9-13 and page 11 in the present specification (e.g., the skilled artisan would understand that formula (VIII') clearly shows an ester group and formula (VIII) clearly shows a phenylene group). Each of claims 2 and 3 has been amended by replacing a period with a semicolon. Also, the amendments to claims 8 and 9 are grammatical in nature. Thus, these are clarifying and not narrowing amendments, and one of skill in the art would understand that these amendments are minor in character. By amending these terms in order to clarify the claimed invention (e.g., correcting typographical and grammatical errors in claims 2, 3, 8 and 9), Applicants in no way are conceding any limitations with respect to the interpretation of the claims under the Doctrine of Equivalents. Claim 5 has been amended into independent form by adding the definition of the polyolefin macromonomer of already recited formula (I).

Based upon the above considerations, entry of the present amendment is respectfully requested.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

Issues under 35 U.S.C. § 112, Second Paragraph

Claims 1-3 and 5-9 stand rejected under 35 U.S.C. § 112, second paragraph, for reasons of indefiniteness (see paragraph 3 of the Office Action). Applicants respectfully traverse, and respectfully refer the Examiner to the claims as presented herein.

With regard to claim 1, the formula has been amended so that the carbon atom only has four valences. Applicants respectfully submit no new matter has been added with this amendment that corrects the typographical error.

With regard to claims 2 and 3, each of these claims now has a semicolon, instead of the claims having two sentences each.

Also, claim 5 has been clarified as can be seen in the listing of claims herein.

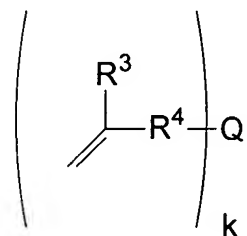
Thus, Applicants respectfully submit that this rejection has been overcome with these clarifying amendments. Reconsideration and withdrawal of this rejection are respectfully requested.

Issues under 35 U.S.C. § 103(a)

Claims 1-3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Lane et al. '963 (U.S. Patent No. 6,306,963) or Schlaefer et al. '611 (U.S. Patent No. 5,856,611), or JP '720 (JP 06329720), each in view of Tatsumi et al. '352 (U.S. Patent No. 6,573,352) (as stated in paragraphs 4-7 of the Office Action). Applicants respectfully traverse each rejection, and reconsideration and withdrawal of these rejections are requested based on the following.

Distinctions over Lane '963 and Tatsumi '352

The Examiner refers Applicants to parts of columns 2, 4, 6 and 8 of the cited Lane '963 reference. Reference is made to a vinyl-terminated polymer having a certain formula having an ester unit and polybutadiene polymer (at column 2, lines 28-39):



However, Applicants respectfully submit that Q in Lane '963 formula represents a polybutadiene homopolymer or butadiene-styrene copolymer. Thus, Q automatically has carbon-carbon double bonds in view of the polymerization mechanism of diene (this fact is further suggested in Lane '963 at column 6, lines 36-67).

In contrast to Lane '963, P in claim 1 of the present invention is a polymer chain obtained by homopolymerizing or copolymerizing olefins, wherein the olefins are represented by $\text{CH}_2=\text{CHR}^1$. In this formula, R^1 is a hydrocarbon group having 1 to 20 carbon atoms, a hydrogen atom or a halogen atom. Therefore, P has no carbon-carbon double bonds, which is in contrast to the disclosure in Lane '936.

The secondary reference of Tatsumi '352 is cited to account for the deficiency in Lane '936 of not disclosing polyolefin produced by a coordination polymerization catalyst containing a transition metal compound (see page 4, last two paragraphs of the Office Action). Tatsumi '352 is cited in disclosing a reactive olefin macromonomer produced by the polymerization of propylene-based homopolymer. However, the polymer disclosed in Tatsumi '352 should be considered to have been made from a carbon atom and hydrogen atom only, because the macromonomer was produced

from ethylene and/ or propylene. Thus, Tatsumi '352 does not account for the deficiencies of Lane '963 regarding Q as discussed above, and a *prima facie* case of obviousness has not been established.

In this regard, U.S. case law squarely holds that a proper obviousness inquiry requires consideration of three factors: (1) the prior art reference (or references when combined) must teach or suggest all the claim limitations; (2) whether or not the prior art would have taught, motivated, or suggested to those of ordinary skill in the art that they should make the claimed invention (or practice the invention in case of a claimed method or process); and (3) whether the prior art establishes that in making the claimed invention (or practicing the invention in case of a claimed method or process), there would have been a reasonable expectation of success. *See In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991); *see also In re Kotzab*, 55 U.S.P.Q.2d 1313, 1316-17 (Fed. Cir. 2000); *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Accordingly, Applicants respectfully submit a *prima facie* case of obviousness has not been established since the initial requirement of disclosure of all claimed features has not been satisfied (e.g., P in the formula P-Z-X). Therefore, this rejection has been overcome.

Further, one of ordinary skill in the art would not be motivated, nor reasonably expect to be successful, in achieving the present invention based on the asserted combination of Lane '983 and Tatsumi '352. For instance, there is no sufficient and clear guidance for the skilled artisan to modify Q having the carbon-carbon double bonds in Lang '963 in an effort to achieve the present invention. Applicants note that while a reference need not expressly teach that the disclosure contained therein should be combined with another, *see Motorola, Inc. v. Interdigital Tech. Corp.*, 43 USPQ2d 1481, 1489 (Fed. Cir. 1997), the showing of combining references "must be clear and particular". *See In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Here, that clear and

particular guidance in the reference(s) to achieve the formulations as presently claimed is lacking. Thus, Applicants respectfully submit that the other requirements for a *prima facie* case of obviousness have not been satisfied as well. Accordingly, this rejection has been overcome for these additional reasons.

Applicants add that the Examiner's proposal of combining Lane '963 with Tatsumi '352 would render the primary reference as inoperable or destroy its intended function. Applicants note that if a proposal for modifying the cited reference in an effort to attain the claimed invention causes the reference to become inoperable or destroys its intended function, then the requisite motivation to make the modification would not have existed. *See In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984) (Federal Circuit stating that modifying the French apparatus as the Board suggested would render the apparatus inoperable for its intended purpose); *In re Fritch*, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992); *see also In re Ratti*, 123 USPQ 349, 352 (CCPA 1959). That is the case here because the present invention would destroy the intended purpose of the Lang '963 reference because its Q would have to be improperly modified (e.g., removal of carbon-carbon double bonds). Applicants add that the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose. *See* M.P.E.P. §§ 2143.01, 2145(III). Thus, Applicants respectfully request withdrawal of this rejection under *In re Gordon*.

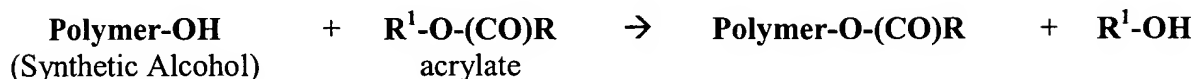
Thus, based on the above, reconsideration and withdrawal of this rejection are respectfully requested.

Distinctions over Schlaefer '611 and Tatsumi '352

As Examiner states in the Office Action, the primary reference of Schlaefer '611 really discloses a product by a transesterification reaction of synthetic alcohol with (meth)acrylate ester

(see column 2, lines 3-15 of the reference). The ideal trans-esterification reaction scheme should be written as follows:

Trans-Esterification



This reaction mechanism in Schlaefer '611 is completely different from what is instantly claimed (see, e.g., the reaction mechanism as defined in Claim 2 or Claim 3). For example, in pending Claim 2 of the present invention, the esterification method is based on "dehydrohalogenation or dehydration" (see Applicants' specification at page 24, lines 18-19). And, in Claim 3 of the present invention, the esterification method is based on "addition reaction" (see the description starting at page 26, line 13 and ending at page 27, line 1). However, the mere fact that disclosures can be combined does not make the combination obvious unless the art also contains something to suggest the desirability of the combination. *See, In re Gordon*, 221 USPQ 1125, 1127 (Fed. Cir. 1984) and *In re Imperato*, 179 U.S.P.Q. 730, 732 (CCPA 1973). That suggestion is missing here given the different reaction mechanisms between the cited combination of references and the present invention.

Because Schlaefer '611 did not disclose the molecular weight and molecular weight distribution of the synthetic alcohol in the '611 specification, there cannot be an estimate of the molecular weight-information of the "Polymer" in the trans-esterified product (see the formula above). Accordingly, Applicants respectfully submit that the polyolefin macromonomer of the present invention, in which the molecular weight distribution of P is clearly defined, is patentably

distinct from the cited Schlaefer '611 reference. Combining the primary reference with the cited secondary Tatsumi '352 reference does not change Applicants' position.

Applicants add that the skilled artisan cannot produce the present invention based on the deficient disclosure in Schlaefer '611 (e.g., no disclosure of the molecular weight and molecular weight distribution of the synthetic alcohol). Applicants note that the showing of combining references "must be clear and particular," which is not the case here since Schlaefer '611 fails to provide the skilled artisan with the molecular weight and molecular weight distribution of the synthetic alcohol in the '611 specification. *See In re Dembiczak*. Tatsumi '352 also does not provide the clear guidance for one of ordinary skill in the art.

Thus, reconsideration and withdrawal of the rejection in view of Schlaefer '611 and Tatsumi '352 is respectfully requested.

Distinctions over JP '720 and Tatsumi '352

In the Office Action, the Examiner refers Applicants to the abstract of JP '720, and adds that the Schlaefer '611 patent cites JP '720 in the '611 patent specification in column 1. However, the present invention is clearly distinguishable from JP '720, as well as from the combination of JP '720 and Tatsumi '352, in that [1] a polymerization catalyst employed to get the polyolefin chain part, [2] the polymerization mechanism, and [3] the method of incorporating the linking group into the macromonomer.

(i) Polymerization Mechanism and the catalyst

In the present invention, P in the general formula (I) (see instantly pending claim 1) is obtained by homopolymerizing or copolymerizing olefins in the presence of a coordination catalyst

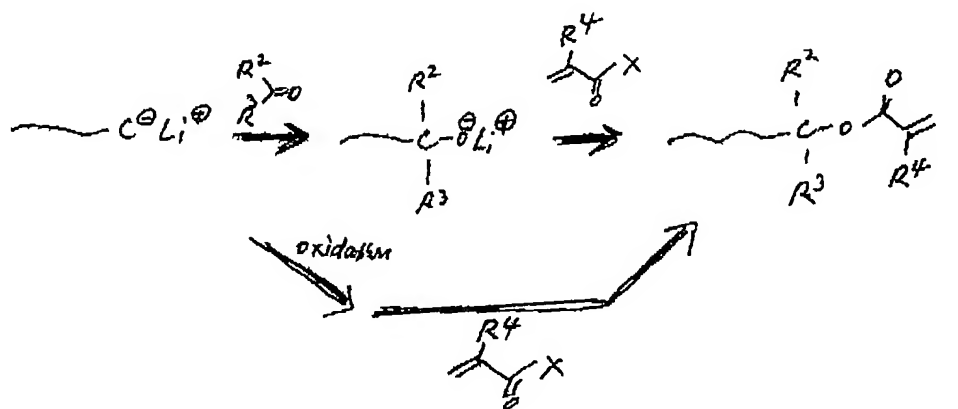
containing a transition compound [COORDINATION POLYMERIZATION]. In contrast, alkyl lithium/tertiary diamine are employed in the JP '720 reference [LIVING ANION POLYMERIZATION] (see, e.g., claim 1 of the primary reference). One of ordinary skill in the art would understand that these are different processes.

(ii) Method to incorporate a Linking Group

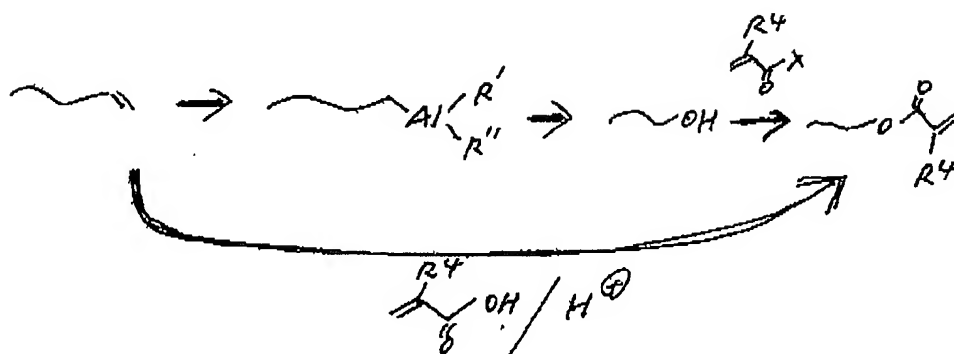
There are numerous differences between the present invention and the cited combination of JP '720 and Tatsumi '352, such that one of ordinary skill in the art upon reading these references would not achieve the present invention.

For example, in JP '720, an ester oxygen atom [-O-(C=O)-] has to be incorporated via a reaction of carbonyl compound or oxygen gas prior to the reaction of (meth)acrylic acid halide, while a carbonyl is not required for the present invention:

JP '720



The Present Invention



Thus, one of ordinary skill in the art would not be motivated, and/or reasonably expect to be successful, in achieving the present invention based on such different reaction mechanisms. Adding the Tatsumi '352 reference does not change such reaction mechanisms required in the primary reference of JP '720. One of skill in the art would not achieve the present invention based on the cited combination of references. Accordingly, withdrawal of this rejection is respectfully requested.

Applicants add that JP '720 is also discussed in Applicants' specification at pages 2-3. As mentioned in the present specification, the living polymerization process as used in JP '720 involves only one polymer that is obtained from one active site on catalyst, and the molecular weight distribution (Mw/Mn) of polyolefin is about 1. Thus, the JP '720 method utilizing the living polymerization is inadequate, in general, for industrial mass production of polyolefins from economical viewpoint. One of ordinary skill in the art would not be even initially refer to the JP '720 in an effort to achieve the present invention because of such differences between JP '720 and the present invention (wherein adding Tatsumi '352 does not account for such differences).

The requisite motivation is lacking for an additional reason. Because JP '720 uses anionic living polymerization (as mentioned above), the use of this method equates to obtaining the following molecular weights in the JP '720 examples:

	Olefin	Temp (°C)	Time (min)	Carbonyl Compound	(Meth)acrylic Acid Halide	Mn of Polymer
Example 1	Ethylene	30	30	Benzaldehyde	Methacrylic	730
Example 2	Ethylene	30	10	None	Acid Chloride	670

As can be seen, and as one of ordinary skill in the art would understand, it is difficult to increase the molecular weight in using the anionic living polymerization of JP '720 (e.g., seven hundred at most can be attained only). In contrast, a polyethylene chain of, e.g., Mn=5,300 (Example 3), and Mn=1,470 (=2,230/1.52; Example 5) are easily obtained with the presently claimed method. Upon reading what is instantly claimed and the method described in JP '720, one of ordinary skill in the art would appreciate such differences and the requisite motivation cannot be deduced from the asserted combination of references.

However, in the Office Action, the Examiner combines JP '720 with Tatsumi '352 for the reasons stated at page 5, first paragraph. However, there are numerous differences in the methods as noted above, as one of ordinary skill in the art would realize, and the proper level of motivation cannot be found from the disclosure of the cited references.

Applicants further note that no proper motivation can be shown if the U.S.P.T.O. has not identified the specific principle known to one of ordinary skill in the art that suggests the claimed method. *See In re Sang Su Lee*, 61 U.S.P.Q.2d 1430, 1434 (Fed. Cir. 2002) (the Board must identify specifically the principles, known to one of ordinary skill, that suggest the claimed combination) (citing *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1459 (Fed. Cir. 1998)). That identification of the specific principle has not been sufficiently done here since there are so many differences between what is instantly claimed and the disclosure in the cited references (e.g., coordination polymerization versus

living anion polymerization; cannot obtain a higher Mn of a compound as achieved by the present invention; etc.) (compare to the reasons for combining the references in the Office Action at page 5).

Thus, the present invention is clearly distinguishable from JP '720, as well as from the combination of JP '720 and Tatsumi '352, since there are differences in [1] a polymerization catalyst employed to get the polyolefin chain part, [2] the polymerization mechanism, and [3] the method of incorporating the linking group into the macromonomer. In other words, one of ordinary skill in the art would not have the requisite motivation and/or reasonable expectation of success in achieving the present invention based on so many differences. *In re Vaeck*. Thus, Applicants respectfully submit a *prima facie* case of obviousness has not been established, and withdrawal of this rejection is respectfully requested.

Summary

Applicants respectfully submit that all rejections under 35 U.S.C. § 103(a) have been overcome. Reconsideration and withdrawal of all rejections are respectfully requested.

Also, Applicants note that claim 5, and any dependent claim thereon, are not at issue. Thus, a declaration of allowable subject matter with respect to these claims is respectfully requested.

Finality of Restriction Requirement

At paragraphs 1-2, page 2 of the Office Action, the Examiner states the grounds of the Restriction Requirement of November 3, 2004, and is made final. In part, the Examiner in paragraph 1 states "... that Z is an ester group (B1) or a phenylene group (B2)." The Examiner also stated that the phenylene having a functional group is related the styrene derivatives of claim 4. Applicants

respectfully submit that they do not understand the non-invention position, and respectfully request reconsideration as follows.

The polyolefin macromonomer, as claimed in claim 1, is defined by the general formula (I), wherein the P group is a polymer chain and X is a vinyl group. Z in formula (I) is only bridging part of the two other mentioned parts. The reason why both the P and X parts of the formula are important is that these two parts play an important role in the graft-polymer that is prepared by the polymerization of the macromonomer and at least one monomer selected from an organic compound having a least one carbon-carbon unsaturated bond. No function is revealed regarding a part Z. Thus, Applicants respectfully submit that there is the presence of unity in pending claim 1, wherein claim 4 is a part of claim 1.

Therefore, Applicants respectfully request the Examiner to reconsider and reverse the withdrawn status of claim 4.

Conclusion

A full and complete response has been made to all issues as cited in the Office Action. Applicants have taken substantial steps in efforts to advance prosecution of the present application. Thus, Applicants respectfully request that a timely Notice of Allowance issue for the present case.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Eugene T. Perez (Reg. No. 48,501) at the telephone number of the undersigned below.

Appl. No. 10/650,919

Art Unit 1711

Reply to Office Action of January 7, 2005

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a two (2) month extension of time for filing a reply in connection with the present application, and the required fee of \$450.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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